UPDATED 22 AUGUST 2018

A-PhI FAQ

1. Are FFRDCs allowed to serve as a PI?
    a. As mentioned in the BAA (p. 15), FFRDCs may serve as either the prime or subcontractor (team members) as long as they meet the eligibility requirements.
2. Can a company charge fee & overhead on 6.1 funding?
    a. Yes - if proposing a procurement contract or an Other Transaction agreement. An Other Transaction agreement would not include fee/profit if performer (non-federal) cost share was involved. Proposers using assistance instruments (grants and cooperative agreements) are prohibited from including fee/profit (prime and subs).
3. Can a company reasonably expect to receive 6.1 funding?
    a. Yes - but the decision regarding the type of funding to be used is made after proposals have been selected.
4. Who will the contracting organization?
    a. It is not determined at this time.
5. Can one work with foundries outside the US?
    a. We have no foundry preference as long as proposers comply with any relevant export control regulations.
6. Do you know if AIM photonics is planning to make processes available at wavelengths less than 1150 nm?
    a. Contact AIM photonics regarding specific questions.
7. Does the physics package for testing stability in TA-1 Phase 1 have to be miniature?
    a. Each component must be of the intended size, but they need not be integrated. The BAA states (pp. 10 and 11) that the sum of the components must be under ½ liter.
8. Is it intended that integrated modulators will be included in the physics package?
    a. It is not required to integrate modulators in the physics package.
9. Is there any Government-Furnished Property (GFP) available?
    a. There is no GFP specified in the BAA, but, it may be requested in your proposal (BAA p. 13).
10. Can commercial lasers and their controls be outside the PIC structure?
    a. Yes, as stated in the BAA (p. 11), commercial lasers and their controls may be outside the physics package.
11. Can vacuum enclosures for the atom traps and reference cavities be off the PIC?
    a. As stated in the BAA (p. 11), the vacuum enclosure and any reference cavities are included in the physics package, which contains the PIC as well.
12. Is frequency comb generation and stabilization in the physics package, and does it count towards the free space optics limit?
    a. Yes, frequency comb generation and stabilization are part of the physics package, and do count towards the free space optic components limit.
13. Are fiber optics and components considered free space optics?
    a. No: fiber optics have guided modes of light and do not count towards the free space optic components limit.

14. Does the 8 page abstract limit include references?
    a. The proposal abstract page limit does not include references.
15. Are methods that meet the TA-1 milestones that do not utilize atoms acceptable?
    a. No, that is not within the scope of this BAA.
16. Are lasers excluded from the physics package in phase 2?
    a. If they are commercial lasers, they are excluded.
17. What is the Sagnac area?
    a. For an interferometer with spatially-separated arms contributing to the interference pattern, the Sagnac area is defined as

$$A_{Sag} = \oint_0^T dt[\vec{x}_{CoM1}(t) - \vec{x}_{CoM2}(t)]$$

18. The BAA mentions being amenable to miniaturization: what does that refer to?
    a. This refers to the future ability to miniaturize all components not included in the physics package.
19. Is the stability metric for TA1 Phase 1 10^{-14} or $10^{-14}/\tau^{1/2}$?
    a. The phase 1 metric is 10^{-14} and is flat from 0.1 to 10 seconds.
20. Is the mechanical vibration spectrum flat?
    a. Yes, it is flat across the frequency spectrum specified in the BAA (p. 11).
21. Does the frequency drift need to be measured in an integrated clock or in a proof of concept demo?
    a. It must be measured in the integrated clock.
22. Which non-commercial lasers are acceptable for TA1?
    a. All non-commercial lasers are appropriate for TA1 as long as they are included in the physics package size and power limits.
23. Are atomic gyroscopes not utilizing trapped atoms acceptable?
    a. This would be considered non-responsive to the BAA. This BAA is specifically for trapped-atom gyroscopes, but DARPA may be interested in other approaches under a different solicitation.
24. What is the definition of vacuum control?
    a. This includes pumps and valves, but does not include electronics.
25. Is there a requested gyroscope bandwidth?
    a. There is not a requested bandwidth in the Phase 1 and 2 metrics; however, a feasible path towards achieving the Phase 3 bandwidth should be provided.
26. Is a non-trapped, non-cooled solution acceptable?
    a. Proposals that use non-trapped, non-cooled atoms – or no atoms at all – would be considered non-responsive as that is not within the scope of this BAA (p. 5).
27. We have not historically worked in topic x, y, and z - will that be considered against us?
    a. Yes, the experience of the team in the areas proposed is part of the “Overall Scientific and Technical Merit” evaluation criterion (BAA p. 37).

28. If full proposal is above the certified cost and pricing data threshold, requiring full supporting cost information, but a subcontractor on the proposal is below the threshold, is full supporting cost information required for them (the subcontractor) also?
    a. In this scenario, the subcontractor (whose proposal amount is below the applicable certified cost and pricing data threshold) would be required (per FAR Part 15) to submit no less than "other than certified cost and pricing data" (the primary point being that the data would not be certified to by the proposer or be subject to a claim of defective cost or pricing data by the Government). However, even if the cost is below the applicable certified cost and pricing threshold, it is best practice (and highly recommended) to still provide the pricing details/support specifically called for in the BAA if the proposer wants the Government to fully understand their proposal (as noted during the Proposers Day event – the Government will not select what it does not understand).
29. Can more than one PIC be used?
    a. There is no limit to the number of PICs that may be in the physics package, subject to volume limits, free-space optics limits, and all other metrics in the BAA (pp. 10 and 11). However the overall complexity and manufacturability of the multi-PIC system will be taken into consideration.
30. Is hybrid integration acceptable?
    a. Yes.
31. If I put the laser inside the physics package does the electrical power count towards the power use?
    a. Additional risk to the power budget will be weighed against future benefit to the program. Concepts that will simplify your system should be described.
32. Can we use a pulsed laser to drive a comb? How does the power count towards the use?
    a. As long as the pulsed laser is a commercially-available product with a path towards miniaturization it would be acceptable. Average power is what will be measured against the program metrics.
33. Is there a distinction between ions and atoms?
    a. No. All ions are atoms.
34. Will this program fall outside DFARS 252.204-7012 "Safeguarding Covered Defense Information and Cyber Incident Reporting (Oct 2016)" that also pertains to subcontractors?
    a. As long as the work is deemed to be fundamental research the information created thereunder would not be meet the definition of "covered defense information" per the subject clause (information created under a fundamental research effort, which would apply to all team members if 6.1 funded, has no controls – it can be make publically accessible without prior government approval). In such a case, the clause would still be included in any procurement contract as required by DFARS 204.7304(c).
35. Does the commercial laser allowance account for pumps for the combs and clock lasers?
    a. Yes, although it should be noted that a custom-built laser made by a commercial entity is not a commercial laser.
36. Are optics that are complicated, or have many facets, considered a single optic?
    a. Yes, if they are a single manufactured unit; but it should not complicate the fabrication process to the point where future manufacturability is unnecessarily difficult.

37. Can I bring light back out of the physics package to amplify it?
    a. No. Light that goes into the physics package should not come back out.
38. Does the physics package need to be in vacuum
    a. You are not required to keep the entire physics package in a vacuum, but if you are using a vacuum system you are required to keep it in the physics package.
39. Are we expected to put modulators directly on our chips?
    a. You are not required to put the modulators on chip; however, you are allowed to do so if you choose.
40. Can we leverage previous DARPA project investments?
    a. Prior DARPA project investments are considered GFP. As stated in the BAA (p. 13), proposals may request government-furnished property, but the availability of that equipment is not guaranteed.
41. Spin-squeezing could provide a $N^{½}$ enhancement and therefore could create a larger effective Sagnac area. How would this be considered?
    a. The Sagnac area has been defined. As with any other approach, the ability of this method to achieve TA2 metrics must be presented with analysis to show how their achievement will be possible.
42. What is the difference between trapped atom and guided atoms?
    a. Guided atoms are considered trapped atoms for the purposes of this program, but the proposed devices must be able to operate in all orientations.
43. What does the 10 W power include?
    a. The power consumed in the physics package.
44. Can a person be on multiple teams?
    a. Yes, assuming they are not being paid multiple times for the same work and that proprietary information of performers working with the shared individual(s) is protected.
45. Can the frequency narrowing be off-chip but in the physics package?
    a. This would be allowed so long as one can meet the other metrics such as one free-space optic and environmental stability.
46. I would like to propose a partial solution.
    a. Partial solutions are considered non-responsive to the BAA.
47. Will the proposers' day slides be available?
    a. DARPA's slides for the proposers' day are available at the following: http://www.darpa.mil/work-with-us/opportunities?tFilter=&oFilter=5&sort=date
48. Can you share the slides from the presenters?
    a. No, we have not received their permission to share their slides.
49. Your deadline is 24 Dec 2018, while elsewhere I saw 16 August for an abstract and 27 Sept for a full application. Can you clarify deadlines?
    a. As is stated in the BAA (p. 32), abstracts must be submitted on or before 1 PM, Eastern Time, August 16. The full proposal must be submitted on or before 1 PM Eastern Time, September 27 to be considered in the initial round of selections. Any proposal received after this deadline may be received and evaluated up to 150 days from the date of posting (December 24, 2018). Likelihood of available funding is greatly reduced for proposals submitted after September 27.

New Questions

50. The BAA says that a history of transitioning U.S. government funded technology to foreign interests will be evaluated negatively; does this imply that foreign institutions should not propose or are less likely to be selected for funding?
    a. This is a fundamental research program that allows for the funding of foreign institutions, and proposals from foreign institutions are welcome. Alliances and partnerships are a critical component of the U.S. National Defense Strategy (https://www.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf). Proposals from foreign institutions that describe how the U.S. would gain an advantage from any technology or knowledge developed would be viewed favorably.
51. What are the technical requirements for the frequency comb source in TA-1, Phase 1?
    a. The TA-1 frequency comb, possibly in combination with other photonics components, must be able to convert the optical frequency for the proposed atomic "clock" transition to the proposed microwave frequency output while supporting all metrics in the BAA.
52. Would a fiber assembly which has coupling elements integrated into the ends (such as what is shown in: https://www.nature.com/articles/s41598-017-05729-8) be considered a single free-space optic or not count as a free-space optic at all?
    a. The approach in the paper would primarily be manipulating free-space modes of light. The Fabry–Pérot mirrors and coupling lenses are two free-space optics, even though they may be bonded to a guiding fiber.
53. Would a cavity comprised of a single, solid rod (rather than two mirrors) be considered a free-space optic?
    a. See FAQ question 36.
54. For a proposal with external team members, do we need to get letters of support from our teaming partners for the abstract? Do we need the letters for the full proposal?
    a. You do not have to have any such letters at the abstract phase, though full subcontract proposals are required as part of your proposals as stated in the BAA (pp. 22 and 23)
55. AFRL are making atom chips. Would it be possible to have one made to our specifications as GFP?
    a. The BAA states that you may request GFP in your proposal.